



Fig. 1. The relative utilization of pinyon cone crops by *Eucosma bobana* (pine-cone moth) larvae as a function of the magnitude of the previous year's cone crop. The y-axis represents the percent of the 1976 cone crop that was aborted due to larval infestation. The x-axis represents the 1975 cone crop as a percent of the average of a 10-year cone production sequence for each *Pinus monophylla* community. If all cone predators were included in the analysis the slope of the regression line would be about 0.5.

K. T. Douglass, A. F. Johnson, P. G. Risser, and T. Weaver were all kind enough to edit and comment on the original version of this report. — FRANK FORCELLA, Department of Biology, Montana State University, Bozeman 59715 (Current address: Department of Botany-Microbiology, University of Oklahoma, Norman 73019).

NOTES ON THE FLORA OF EAST-CENTRAL IDAHO. — Although excellent treatments of much of Idaho's flora have been published (Davis, *Fl. Idaho*, 1952; Hitchcock et al., *Vasc. Plants Pacific Northw.*, 1955–1969, and Hitchcock and Cronquist, *Fl. Pacific Northw.*, 1973), some areas within the state remain relatively unknown floristically. With funding made possible by a C. R. Stillinger Grant, intensive botanical exploration of parts of east-central Idaho (Lost River, Lemhi, and Beaverhead Ranges of Custer, Lemhi, Butte, and Clark Counties) was initiated in the summer of 1973. As a result of three collecting seasons in the region, several plants worthy of mention have been encountered. Collection numbers are those of the author; specimens are deposited in ID.

Aquilegia coerulea James var. *coerulea*. Lemhi Co., E slope Lemhi Range, Targhee Nat. Forest. Moist, N-facing slope beneath Douglas fir, Mammoth Canyon, 2136 m, 15 July 1973, 1108. Although the var. *coerulea* is common in the central Rocky Mountain states, it is rarely encountered in Idaho, and this population, which is composed of about half var. *ochroleuca* Hook., may represent the NW limit of this blue-seeped columbine. A second population in Butte Co., 7.5 km SE of Mammoth Canyon in a southern tributary of Meadow Canyon is composed of both varieties of *A. coerulea*, *A. formosa* Fisch., and *A. flavescens* Wats., as well as a wide array of putative hybrids apparently combining features of all three taxa, 1601, 1602, 1603, 1604.

Saltha leptosepala DC. var. *sulfurea* Hitchc. Lemhi Co., E slope Lemhi Range, Salmon Nat. Forest. Moist ground at head of small lake, headwaters of Middle Fork Little Timber Creek, 2834 m, 3 July 1973, 932; subalpine meadow above Mill Lake, 2800 m, 30 July 1974, 2096. This variety was previously known only from the Lost River Range, Custer Co., Idaho, but appears to be a common inhabitant of subalpine stream banks and lake shores of the central and northern Lemhi Range where substrates are primarily quartzitic.

Draba oreibata Macbr. & Pays. Lemhi Co., E slope Lemhi Range, Targhee Nat. Forest. Alpine tundra on NE side of peak 10,652, 2.5 km NW of junction of Meadow Canyon and South Fork, 3121 m, Sec 29, T11N, R28E, 24 July 1975, 2819; crest of Lemhi Range, summit rocks of Big Windy Peak, 3170 m, at head of Spring Mountain Canyon, 16 July 1973, 1116. This species was previously known in Idaho only from Pass Creek Gorge, Lost River Range, Custer Co. Its occurrence in the Lemhi Range is apparently restricted to limestone substrate.

Lesquerella carinata Rollins. Lemhi Co., Crest of Lemhi Range, summit rocks of Big Windy Peak, 3170 m, head of Spring Mountain Canyon, 16 July 1973, 1118; E slope Lemhi Range, NE ridge of peak 10,858 just S of junction of Meadow Canyon and South Fork, 2438 m, 24 July 1975, 2864; Crest of Lemhi Range, 0.7 km N of Bell Mountain, 3160 m, 29 July 1975, 2882. Butte Co., Crest of Lemhi Range, limestone rocks on summit of peak 10,400 at head of Middle Fork Eightmile Canyon, 3170 m, 3 July 1974, 1442. Clark Co., Crest of Lemhi Range at the head of Surret Canyon, 2926 m, 8 July 1975, 2593; E base of Lemhi Range, outwash of Eightmile Canyon, 1920 m, 4 June 1975, 2226; N side of Eightmile Canyon on limestone outcrop, 2011 m, 6 June 1975, 2289; W slope of Beaverhead Range, limestone outcrop in Peterson Canyon, 1804 m, 10 June 1975, 2357. Although apparently restricted to limestone in east-central Idaho and previously considered rare, this species is common in Custer, Lemhi, Butte, and Clark Counties from lower elevations to the highest summits, and has been reported recently from Montana by Lackschewitz (Madroño 23:361. 1976).

Saxifraga debilis Engelm. Lemhi Co., W slope Beaverhead Range, Salmon Nat. Forest, moist rocks near summit of Mountain Peak, 3050 m, near the head of Bull Creek, 22 July 1975, 2794. Although this species is listed by Davis (op. cit.), there is no discussion concerning its occurrence within the state. Hitchcock and Cronquist (op. cit.) state that it is probably in Idaho. It has been encountered but once in three field seasons of intensive exploration in the region and can most probably be considered rare for the state.

Trifolium haydenii Porter. Lemhi Co., E slope Lemhi Range, Targhee Nat. Forest, limestone rocks at junction of Meadow Canyon with South Fork, 2316 m, Sec 33, T11N, R28E, 7 July 1974, 1559; limestone rocks on summit of peak 10,652, N side of Meadow Canyon, 3246 m, 24 July 1975, 2844; W slope Beaverhead Range, Salmon Nat. Forest, quartzite talus on east side of Mountain Peak, 2926 m, 22 July 1975, 2761. Butte Co., E slope Lemhi Range, Targhee Nat. Forest, limestone rocks near summit of peak 10,858, 1 km S of junction of Meadow Canyon and South Fork, 3185 m, 10 July 1975, 2623. This plant is common in the Meadow Canyon drainage of the southern Lemhi Range and occurs from canyon bottoms with limber

pine and Douglas fir to the highest summits. It is particularly abundant on rocky alpine slopes and, in some cases, is the most abundant understory plant with Engelmann spruce at timberline. This is believed to be the first report of this species for Idaho.

Gentiana tenella Rottb. Custer Co., E slope Lost River Range, Challis Nat. Forest, moist, grassy bank of Pass Lake near outlet, head of W Fork Pahsimeroi River, 3079 m, 15 August 1973, 1169. This species is apparently rare in Idaho for searches of Pacific Northwestern herbaria (ID, IDS, WS, and WTU) and NY have failed to produce a single Idaho specimen. Hitchcock and Cronquist (op. cit.) indicate that it is reported from Idaho.

Langloisia punctata (Cov.) Goodd. Clark Co., Dry, rocky soil at Reno Point, S end of Beaverhead Range, 1646 m, 9 July 1975, 2604. This is a rather substantial population of several hundred plants and represents a significant N extension of its range. It has not previously been reported from Idaho although its occurrence has been noted in SW Idaho by Dr. Patricia Packard (pers. comm.).

Phacelia incana Brand. Clark Co., W slope of S Beaverhead Range Targhee Nat. Forest, moist limestone talus, Bare Canyon, 2103 m, 22 June 1975, 2482; limestone rocks at Reno Point, 1648 m, 9 July 1975, 2606. This species was previously known in Idaho only from a few collections and is rare in the state. The collections cited are populations composed of very few, widely scattered plants.

Phacelia lyallii (Gray) Rydb. Lemhi Co., E slope Lemhi Range, Salmon Nat. Forest, talus slope on saddle connecting Mill Lake with E Fork Hayden Creek, 2877 m, 1 August 1974, 2135. Gillett (Rhodora 62:205-222. 1960) reported two locations for this species in N Lemhi Co. Neither Davis (op. cit.) nor Hitchcock and Cronquist (op. cit.) indicate its presence in Idaho.

Pedicularis contorta Benth. var. *ctenophora* (Rydb.) Nels. & Macbr. Lemhi Co., E slope Lemhi Range, Targhee Nat. Forest, grassy slope of peak 10,652. 3 km NW of junction of Meadow Canyon and South Fork, 2746 m, Sec 21, T11N, R28E, 24 July 1795, 2859. The collection cited represents a W extension of the range of this variety of only about 75 km, but it has not previously been reported for Idaho. This plant is abundant in the Meadow Canyon area but has not been encountered elsewhere in the region. — DOUGLASS M. HENDERSON, Department of Biological Sciences, University of Idaho, Moscow 83843.

REVIEWS

Terrestrial vegetation of California. Ed. by MICHAEL G. BARBOUR and JACK MAJOR. + map of the natural vegetation of California (1:1,000,000) by A. W. Küchler. John Wiley and Sons, New York. 1977. \$47.50.

California is one of the most diverse of states geologically, climatically, and biologically. In what other state than California grow plants of more than 5,000 native species? And in how many intricate ways do these plants become arranged into vegetational communities from tall forests to the almost barren bajadas of extreme deserts? From chaparral to alpine fell fields? Who would dare to make order out of such ecological chaos? Two people did, and to them we are indebted for this book. Without the leadership of Barbour and Major, *Terrestrial Vegetation of California* could not have been produced, even given the wealth of material and the cooperation of knowledgeable colleagues.

The wealth of plant species in the California Floristic Province, the endemics, the intricate genetic relationships, and the combination of rock and climate led to the dominance of taxonomy in California at mid-century and to the rise of biosystematics. Because of this natural pre-occupation with flora and its evolution, it is not too surprising that research on vegetational structure and classification in California was somewhat neglected, especially by academic scientists. This book could not have been written even as recently as twenty years ago. It comes none too early